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FM 121 Rehabilitation S Curve Realignment, Grayson County, Texas

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Report for Archeological Survey

FM 121 Rehabilitation S Curve Realignment,

Grayson County, Texas

Paris District

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Texas Antiquities Permit No. 7164

Abstract

On February 22 and March 9–10, 2015, SWCA Environmental Consultants (SWCA) conducted an intensive cultural resources survey with systematic hand and mechanical excavations along Farm-to-Market (FM) 121 in Grayson County, Texas. SWCA conducted these investigations for the Texas Department of Transportation Paris District for the proposed rehabilitation S curve realignment of FM 121. The work was conducted in compliance with Section 106 of the National Historic Preservation Act (NHPA; 16 USC 470) and the Antiquities Code of Texas (ACT; 9 NRC 191). Jason Barrett served as Principal Investigator under Texas Antiquities Code Permit No. 7164.

The area of potential effects (APE) is defined as the 60- to 100-foot-wide (18- to 30-meter-wide) FM 121 right-of-way, extending a distance of 7.4 miles (11.9 kilometers) between the towns of Gunter and Elmont, Texas, and 19.91 acres of new ROW for the S curve realignment section, or a total of 82 acres. The maximum depth of impacts is estimated to be up to 3 feet (90 centimeters [cm]) below the current ground surface for the entire project, although widening along the existing roadway will generally be accomplished through fill-section expansion. Subsurface impact below the current level of disturbance is not anticipated with fill-section expansion.

No previous cultural resources investigations had been conducted and no archaeological sites are documented within the APE. One potential historic-age structure is depicted within the APE on the 1936 Grayson County General Highway Map on the south side of FM 121; however, a review of current aerial imagery and field reconnaissance indicates that this structure is no longer extant.

SWCA archaeologists inspected the ground surface across the entire APE and excavated a total of six backhoe trenches and 19 shovel tests. Mechanical trenching was limited to the larger drainages (East Fork Trinity River and Squirrel Creek) crossed by the project alignment. Both drainages are situated against an interfluve landform with their floodplains (composing roughly 4.6 acres of the project area total) located to the west (East Fork Trinity River) or to the east (Squirrel Creek) of the respective waterways. Existing utilities precluded placement of additional trenches at Squirrel Creek where the ROW narrowed in the southeast quadrant. In addition, SWCA excavated 19 shovel tests within the APE. Given the level of existing disturbance and limited potential for subsurface impacts in areas of existing ROW characterized by upland terrain, shovel testing focused on areas of new ROW proposed for the addition of S curves to the roadway design.

The excavations at the East Fork Trinity River crossing encountered silt loam grading to silt clay loam with increasing amounts of calcium carbonate filaments and nodules and horizons of matrix-supported sub-angular limestone clast materials (pebbles and gravels) beginning at about 3.9 feet (118 centimeters below surface [cmbs]). The excavations at the Squirrel

Creek crossing encountered clay loam grading to clay with vertical cracks and slickensides with some level of disturbance noted to a maximum of 2.6 feet (80 cmbs) and dense clay beginning at approximately 3 feet (90 cmbs).

No archaeological sites were documented within the APE. One site (41GS246), an early- to late-twentieth century farmstead, was identified adjacent to the APE, but has been severely disturbed by heavy equipment, lacks horizontal or vertical integrity, and can provide no new or beneficial information to local or regional history.

Given the results of the survey, SWCA recommends that no further cultural resources investigations are warranted within the existing ROW or the 19.6 acres of newly proposed ROW of FM 121. Although existing utilities restricted the amount of trenching that could be conducted in some areas, available exposures and trenches provided sufficient visibility to adequately assess the East Fork Trinity River and Squirrel Creek crossings.

Project Identification

- **Date:** 3/17/2015
- **Date(s) of Survey:** 02/22/2015 and 03/09–10/2015
- **Archeological Survey Type:** Reconnaissance ☐ Intensive ☒
- **Report Version:** Draft ☒ Final ☐
- **Jurisdiction:** Federal ☒ State ☒
- **Texas Antiquities Permit Number:** 7164
- **District:** Paris
- **County or Counties:** Grayson
- **USGS Quadrangle(s):** Gunter (3396-243)
- **Highway:** FM 121; from Gunter, Texas, east 7.4 miles to Elmont, Texas.
- **CSJ:** 0729-01-037
- **Report Author(s):** Christina Nielsen, Ken Lawrence, and Jason W. Barrett
- **Principal Investigator:** Jason Barrett

Texas Historical Commission Approval

Signature Date

Project Description

- **Project Type:** Rehabilitation S curve realignment
- **Total Project Impact Acreage:** 82.0 acres
- **New Right of Way (ROW) Acreage:** 19.91 acres
- **Easement Acreage:** 62.09 acres
- **Area of Pedestrian Survey:** 82 acres
- **Project Description and Impacts:** The existing 7.4-mile-long (11.9-kilometer-long) by 22-foot-wide (6.7-meter-wide) FM 121 pavement will be widened to 26 feet (8 meters [m]) to provide two 11-foot (3.4-m) travel lanes and two 2-foot (0.6-m) shoulders along the entire length of the project. In addition, new construction will include straightening of S curves from 3.7 miles east of the beginning of the project to 5.4 miles east of the project beginning (Figures 1 and 2).
- **Area of Potential Effects (APE):** The APE is defined as the 60- to 100-foot-wide (18- to 30-m-wide) FM 121 ROW, extending a distance of 7.4 miles (11.9 kilometers) between the towns of Gunter and Elmont, Texas, and 19.91 acres of new ROW for the S curve realignment section, or a total of 82 acres. The maximum depth of impacts is estimated to be up to 3 feet (90 cm) below the current ground surface for the project, although widening along the existing roadway will generally be accomplished through fill-section expansion. Subsurface impacts below the current level of disturbance do not typically result from fill-section expansion within existing ROW.
- **Parcel Number(s):**

  Parcel 1-Part 1; Parcel 1-Part 2; Parcel 2; Parcel 3; Parcel 4-Part 1; Parcel 4-Part 2
- **Project Area Ownership:** Existing TxDOT ROW and private property (proposed new ROW)

Project Setting

- **Topography:** The project area is on a broad, level surface within the Blackland Prairie (Wermund 2012). This area is characterized as having low rolling topography with geologic strata derived from chalks and marls that dip south and east (Wermund 2012). The elevation varies from 660 feet (201 m) to 815 feet (248 m) above mean sea level.
- **Geology:** The surface geology for the project area is mapped as late-Cretaceous-age Austin Chalk and Eagle Ford Formation (far western edge 0.7 mile). Austin chalk is characterized as chalk with inter beds and partings of calcareous light gray clay in the upper and lower parts of the formation. The middle part of the formation is mostly light gray, thin-bedded marl with inter beds of massive chalk and hard lime mudstone to soft chalk (Barnes 1991).

- The Eagle Ford Formation is characterized as medium- to dark-gray shale with some thin platy beds of sandstone and sandy limestone in the upper and middle parts of the formation (Barnes 1991).
- **Soils:** The soils along the project area are widely variable, but are described as mostly associated with upland settings. The project area is within the Fairlie-Austin-Houston Black general soil map unit (Cochran 1980; Natural Resources Conservation Service [NRCS] 2015). This map unit is characterized as moderately deep and deep, moderately slowly permeable and very slowly permeable, clayey soils. The Fairlie soils are located on nearly level to gently sloping uplands. The typical soil profile is a 15-inch-thick surface layer of very dark gray clay followed by a 30-inch-thick layer of brownish clay on top of white, platy chalk. Austin soils are gently sloping and located on side slopes of ridges. The typical soil profile is 11 inches of dark grayish brown silty clay followed by 11 inches of grayish silty clay, and then an 8-inch-thick layer of grayish silty clay loam overlying white platy chalk. The Houston Black soils are on nearly level to gently sloping uplands and consist of a 17-inch-thick dark gray clay surface layer overlying brownish clay.
- The soils at the East Fork Trinity River and Squirrel Creek are mapped as occasionally flooded clays of the Elbon and Trinity series (NRCS 2015). The Elbon series is described as deep loams and clays derived from alluvial parent material. The Trinity series is characterized as deep floodplain soils derived from alkaline clayey alluvium. These floodplain soils are aligned by Lewisville silty clay situated on upland side slopes. The Lewisville series is described as very deep soils formed in ancient loamy and calcareous sediments (NRCS 2015). Although this area is not covered by Abbott's (2011) study of Potential Archeological Liability Mapping (PALM) of the Fort Worth District, several soil series within the APE are discussed. Specifically, the Trinity and Lewisville series are interpreted to have moderate to high geoarchaeological potential for cultural resources (Abbott 2011:20–23).
- **Land Use:** The APE is primarily surrounded by open, flat, and active agricultural fields and scattered residential development (Figures 3–4). The exception to this is the riparian margins along waterways traversed by the project alignment including Stanley Creek, the East Fork Trinity River, and Squirrel Creek as well as various small tributaries of the aforementioned waterways.
- **Vegetation:** Vegetation surrounding the project area is primarily open pastures with short, mixed grasses and a scattering of mixed hardwoods. The riparian areas along the drainages of the APE contain mixed hardwoods (oaks and elms), shrubs, and short grasses (Figures 5–7).
- **Estimated Ground Surface Visibility:** 60–90%.
- **Previous Investigations and Known Archeological Sites:** No investigations have been conducted and no known archaeological sites are present within the APE. A structure is depicted on the 1936 Grayson County General Highway Map on the south side of FM

121, approximately 0.38 mile east of E. M. M. Ranch Road. A review of current aerial imagery and the field investigations indicated that this structure is no longer extant.

- The nearest known archaeological site, 41GS232, is approximately 0.23 mile (370 m) southwest of the current APE. According to the Texas Historical Commission (THC) Site Atlas (Atlas) (2015), the site consists of a sparse scatter of historic-age artifacts recorded in 2012 by archaeologists from Geo-Marine, Inc. during the Oncor Electric Krum West to Anna 345 kV CREZ Transmission Line Survey (Green et al. 2013). A total of seven artifacts were recovered on the surface including one machine-made FERRIS brick, one refined earthenware fragment, two terracotta tiles, two aqua window glass fragments, and one fragment of clear bottle glass. The portion of the site within the proposed transmission line ROW was considered to have little research potential based on the poor contextual integrity of the site and the limited artifact content.
- **Comments on Project Setting:** The project area predominantly crosses upland prairies occasionally intersected by waterways of varying size and magnitude.

Survey Methods

- **Surveyors:** Ken Lawrence, Jessica Ulmer, and Jared Wiersema.
- **Methodological Description:** A pedestrian inspection was conducted across the entire APE, located within the existing TxDOT ROW (Figures 8a–8c). To assess the previously noted potential for deeply buried archaeological sites, backhoe trenching served as the primary method for quickly and efficiently exploring areas and deposits.
- SWCA Environmental Consultants (SWCA) archaeologists determined trench placement at the project area crossing based on the level of disturbance, the location of any impacted areas such as previous construction, existing buried utility locations, and the preservation potential for archaeological sites. A total of six backhoe trenches (BHTs) were excavated along the project area with three trenches (BHTs 01–03) placed at the East Fork of the Trinity River and three trenches (BHTs 04–06) placed at Squirrel Creek (Figures 8b–8c). BHTs were excavated to a depth sufficient to determine the presence/absence of buried cultural materials and to allow the complete recording of all features and geomorphic information to depths of project impacts. Generally, trenches were 5 to 6 feet (1.6 to 1.8 m) deep, 12 feet (3.6 m) long, and 3 feet (1 m) wide. An experienced archaeologist monitored all trenching while excavations were underway and a portion of soil from every third backhoe bucket was screened through ¼-inch wire mesh. Once the trench was excavated to 5 feet in depth, an SWCA archaeologist scraped down a minimum of 6 feet (1.8 m) of one trench wall and examined the profiles for artifacts, features, or other cultural manifestations, and recorded stratigraphic descriptions for each trench (Table 1). In accordance with Occupational Safety and Health Administration (OSHA) (29 Code of Federal Regulations [CFR] Part 1926) regulations, trenches excavated beyond 5 feet below ground surface were not entered.

Table 1. Backhoe Trench Data

Trench	Strat	Depth (cmbs)	Munsell*	Soil Color	Soil Texture Description	Inclusions	Lower Boundary	Comments
BHT01 East Fork Trinity River	I	0–22	10YR3/2	very dark grayish brown	silty clay loam to silty clay	10% roots, 1% earthworm burrows, 10% limestone pebbles and small gravels, recent charcoal	clear and wavy/smooth	Disturbed-No cultural material encountered.
	II	22–73	10YR5/3	brown	fine silty loam	7% rootlets, 10% small vertical cracks, 10–15% root and insect burrows	clear and wavy	No cultural material encountered.
	III	73–155	10YR4/1–10YR4/2	dark gray to dark grayish brown	silt loam	3% rootlets, 1% snail shell, 1% fine $CaCO_3$ filaments, subtle slickensides, 5% insect burrows	clear and smooth	No cultural material encountered.
	IV	155–195	10YR5/3–10YR5/4	brown to yellowish brown	silty clay loam	abundant sub-angular limestone gravels and pebbles	gradual and smooth	No cultural material encountered.
	V	195–230+	10YR5/3	brown	clay loam	40% $CaCO_3$ nodules, limestone gravels, 1–2% rabdotus	unobserved	No cultural material encountered.
BHT02 East Fork Trinity River	I	0–25	10YR3/2	very dark grayish brown	silty clay loam to silty clay	10% roots, 1% earthworm burrows, 10% limestone pebbles and small gravels, recent charcoal	clear and wavy/smooth	Disturbed-No cultural material encountered.
	II	25–74	10YR5/3	brown	fine silty loam	7% rootlets, 8% small vertical cracks, 10–15% root and insect burrows	clear and wavy	No cultural material encountered.
	III	74–118	10YR4/1–10YR4/2	dark gray to dark grayish brown	silt loam	3% rootlets, 1% snail shell, 1% fine $CaCO_3$ filaments, subtle slickensides, 10% insect burrows	clear and smooth	Fauna (bone) recovered from 100–110 cmbs. No cultural material encountered.
	IV	118–155	10YR4/2–10YR4/3	dark grayish brown to brown	silty clay loam	50% sub-rounded and tabular limestone pebbles and small gravels	abrupt and smooth	No cultural material encountered.
	V	155–170+	10YR5/3	brown	clay loam	40% $CaCO_3$ nodules, limestone gravels, 1–2% rabdotus	unobserved	No cultural material encountered.

Trench	Strat	Depth (cmbs)	Munsell*	Soil Color	Soil Texture Description	Inclusions	Lower Boundary	Comments
BHT03 East Fork Trinity River	I	0–21	10YR3/1	very dark gray	clay loam	10% roots and rootlets, insect burrows, 10% imported gravel, charcoal, modern debris	abrupt and irregular	Disturbed-Modern debris includes glass, wire, and fill. No cultural material encountered.
	II	21–63	10YR4/4–10YR5/4	dark yellowish brown to yellowish brown	silty clay loam	15% earthworm burrows, 5–10% insect burrows, 7% rootlets, 2% subtle vertical cracks, 2% snail shell fragments, 3% scattered charcoal	clear and sloping	No cultural material encountered.
	III	63–91	10YR4/3	brown	silty clay loam	10% insect galleries, 3–4% rootlets, 2% snail shell, 3% charcoal flecking	clear and sloping	No cultural material encountered.
	IV	91–124	10YR4/1–10YR3/1	dark gray to very dark gray	silt loam	20–30% insect burrows, 3% snail shell, subtle slickensides, 3–5% rootlets	clear and smooth	Horizon is discontinuous. No cultural material encountered.
	V	124–190	10YR4/3–10YR5/3	brown	silt loam	5% slight gray to white filaments, 5% snail shell (heliodiscus and rabdotus), 10–20% insect burrows, 30–35% pebbles	gradual and smooth	No cultural material encountered.
	VI	190–260	10YR5/3	brown	silt clay loam	abundant sub-angular limestone gravels and pebbles	gradual and smooth	No cultural material encountered.
	VII	260–280+	10YR6/3	pale brown	silt clay loam	limestone gravels and small cobbles, calcareous gravels and pebbles	unobserved	No cultural material encountered.
BHT04 Squirrel Creek	I	0–16	10YR2/1–10YR3/1	black to very dark gray	clay loam	50–60% roots and rootlets, 10% earthworm burrows, 10% insect burrows, 2% scattered limestone pebbles	clear and smooth	Disturbed-No cultural material encountered.
	II	16–48	10YR3/1–10YR4/1	very dark gray to dark gray	silty clay loam	30% roots and rootlets, 2% sub-angular limestone gravels, 5–10% earthworm and insect burrows, 2–3% limestone pebbles	abrupt and smooth	Disturbed-Rotting vegetation at base of strat. No cultural material encountered.
	III	48–81	10YR5/2	grayish brown	silty clay loam	5% vertical cracking, subtle slickensides, common large-grain limestone, 15–20% pin hole burrows, 7% rootlets	gradual/abrupt and sloping	Disturbed-No cultural material encountered.
	IV	81–165+	10YR6/3	pale brown	silty clay loam	40% sub-angular and tabular limestone gravels, 20% sub-angular and tabular limestone pebbles	unobserved	No cultural material encountered.

Trench	Strat	Depth (cmbs)	Munsell*	Soil Color	Soil Texture Description	Inclusions	Lower Boundary	Comments
BHT05 Squirrel Creek	I	0–13	10YR2/1	black	clay loam	20–30% roots and rootlets, 7–10% limestone gravels, 1% snail shell	clear and smooth	Disturbed-No cultural material encountered.
	II	13–81	10YR3/1	very dark gray	clay loam to clay	35% slickensides, 10% small vertical cracks, 5% rootlets, 5% insect and worm burrows, 1% small gravels	gradual and smooth	No cultural material encountered.
	III	81–180	10YR4/2–10YR4/3	dark grayish brown to brown	clay loam to clay	15% large slickensides, 5% pin hole burrows, 20% sub-rounded to sub-angular limestone gravels and pebbles	gradual and clear	No cultural material encountered.
	IV	180–300+	10YR4/2–10YR4/3	dark grayish brown to brown	clay	5–10% $CaCO_3$ filaments, 10% limestone pebbles, ferrous staining	unobserved	No cultural material encountered.
BHT06 Squirrel Creek	I	0–42	10YR2/1–10YR2/2	black to very dark brown	clay	10% roots and rootlets, 3–5% vertical cracks, 15–20% limestone pebbles and gravels, 5% earthworm burrows	gradual and smooth	Disturbed-One modern beverage can.
	II	42–71	10YR3/2	very dark grayish brown	clay loam	3% rootlets, 5–10% insect and earthworm burrows, 3% limestone pebbles	clear and smooth	No cultural material encountered.
	III	71–96	10YR4/1	dark gray	clay loam to clay	20–30% slickensides, 3% rootlets, 7% pin hole burrows, 3% limestone pebbles	clear and smooth	No cultural material encountered.
	IV	96–155+	10YR4/1–10YR5/1	dark gray to gray	clay	1% rootlets, snail shell fragment, 2–3% limestone pebbles, off-white filaments	unobserved	No cultural material encountered.

- SWCA performed all work in accordance with OSHA (29 CFR Part 1926) regulations. When necessary to assess the potential for buried deposits in excess of 5 feet (1.5 m) below ground surface, using the methods noted above, a portion of soil from every third backhoe bucket was screened through ¼-inch wire mesh to assess presence or absence of cultural materials and the profile was observed from the surface. The entire process was thoroughly documented and photographed. Upon completion of excavation, all trenches were backfilled and returned as closely as possible to their original surface contours. In select areas (i.e., BHT02), a column of soil was excavated and screened along one side of the trench. This is mainly performed in areas with previously recorded sites or the presence of possible cultural materials. The column sample was roughly 30 × 30 cm in size, extending from the ground surface to the base of the trench or until a horizon of Pleistocene aged deposits was encountered. To maintain vertical control of discovered cultural materials, soil from the column was removed in arbitrary 20-cm levels with respect to the identified stratigraphy and screened through ¼-inch hardware screen mesh.

Method	Quantity in Existing ROW	Quantity in Proposed New ROW	Quantity in Temporary Easements	Total Number per Acre
Shovel Test Units	3	16	n/a	0.23
Auger Test Units	0	n/a	n/a	0
Mechanical Trenching	6	0	0	0.07

- **Other Methods:** None
- **Collection and Curation:** NO ☒ YES ☐ If yes, specify facility.
- **Comments on Methods:** Investigations were in compliance with the recommended THC/Council of Texas Archeologists (CTA) survey standards. The survey standards recommend one shovel test pit for every 2 acres for a project of this size (i.e., 11-100 acres), and recommend mechanical trenching in settings characterized by Holocene alluvium where sites may be deeply buried. The actual acreage of alluvial floodplain within the project area is 4.6 acres within the larger 82.0 acres of the project. When considering only areas featuring Holocene-aged alluvium, one trench was excavated for every 1.3 acres of floodplain, encompassing the East Fork of the Trinity River (1.6 acres) and Squirrel Creek (3 acres). For the remaining 77.6 acres, the 19 shovel test units were excavated, including three in existing ROW and 16 in the 19.91 acres of new ROW. The majority of existing ROW on upland terrain was eliminated from shovel survey due to extensive existing disturbance, no potential for deeply buried deposits, and the low potential for subsurface impacts.

Survey Results

- **Project Area Description:** The project area is in a rural area with a mix of residential development and large agricultural fields. The project area traverses gently undulating rocky upland fields that are intersected by several drainages and associated valleys. The rocky uplands contain clay loams and clays capping shallow limestone and chalk bedrock while the valleys contain alluvial and colluvial deposits that align the larger waterways.
- Mechanical trenching was limited to the larger drainages (East Fork Trinity River and Squirrel Creek) crossed by the project alignment. These two drainages are separated by an interfluve ridge with the larger drainage (i.e., East Fork Trinity River) on the west side of the landform and the smaller Squirrel Creek on the east side. Both drainages are against the interfluve landform with their floodplains (composing roughly 4.6 acres of the project area total) located to the west (East Fork Trinity River) or to the east (Squirrel Creek) of the respective waterways.
- At the East Fork Trinity River crossing, the channel is about 15 feet (4.5 m) wide with a steady hydrologic flow of unknown depth. The base of the channel was unobserved, but limestone bedrock was present near the contact of the terrace base and the waterway. The drainage exhibits an unpaired terrace system with the interfluve landform composing the left bank (east side) while the right bank (west side) contains two alluvial terraces (T_0 and T_1) (Waters 1992). The interfluve tread is perched about 18 feet (5 m) above the channel base and slopes toward the drainage (Figure 9). On the right bank, the tread of the T_0 terrace is about 5 feet (1.5 m) tall, roughly 50 feet wide (15 m), and dramatically slopes toward the channel. The tread of the T_1 terrace is roughly equivalent with the deck of the existing bridge, which is about 15 feet (4.5 m) above the channel base. The T_1 terrace is broad and gradually rises in elevation westward away from the drainage encountering the slopes of an upland about 400–500 feet west of the channel. Three backhoe trenches (BHTs 01–03) were excavated in the western quadrants of this crossing upon the tread of the T_1 terrace (see Figure 8c). BHT 01 was excavated in the northwest quadrant while BHTs 02–03 were placed in the southwest quadrant. The stratigraphy in these three trenches was examined to a maximum depth of 280 cmbs (Figures 10–12). The stratigraphy of these trenches was very similar, containing silt loams grading to silt clay loams with increasing amounts of calcium carbonate ($CaCO_3$) filaments and nodules with depth (see Table 1). Horizons of matrix-supported sub-angular limestone clast materials (pebbles and gravels) were observed beginning about 118 cmbs. Overall, these soils most closely correlate with that described for the Lewisville silty clay (NRCS 2015).
- The investigations at the East Fork Trinity River did not encounter any cultural materials, but did observe faunal remains in BHT 02 (see Table 1). The bone was observed between 100–110 cmbs and appears to be an ulna from a medium to large mammal, most likely a deer (Figure 13). The bone was complete with the exception of damage from the trench excavation and exhibited no evidence of cultural modification. To investigate for the presence of cultural materials and other faunal remains, a column sample was placed in the trench where the bone was observed (see Figure 11). The column sample was negative for cultural materials, but

several fragments from the damaged bone were recovered. Similarly, BHT 03, which also was negative for cultural materials, was excavated adjacent to BHT 02 to determine the presence of cultural materials and other faunal remains. Due to the paucity of other faunal remains and the absence of cultural materials, the bone is interpreted to have been deposited under natural rather than cultural circumstances.

- At the Squirrel Creek crossing, the channel is very similar to that of the East Fork Trinity River (Figure 14). Squirrel Creek differs in that it is slightly narrower and does not contain a T_0 terrace at the crossing. Rather, the western quadrants of the drainage consist of the upland ridge (interfluve) while the eastern quadrants appear to be the T_1 terrace that composes the floodplain. The T_1 terrace of Squirrel Creek is broad, about 17 feet (5 m) above the channel, and gradually rises in elevation eastward away from the drainage encountering the slopes of an upland about 700–800 feet east of the channel (Figure 15). Three backhoe trenches (BHTs 04–06) were placed in the northeast quadrant on the tread of the T_1 landform (see Figure 8c). No excavations were placed in the southeast quadrant due to the slightly narrower ROW, road berm, and buried utilities (Figure 16). The stratigraphy in these three trenches was examined to a maximum depth of 300 cmbs (Figures 17–19). The stratigraphy of BHT04, closest to the drainage, differed from BHTs 05–06 in that it exhibited disturbed horizons overlying a horizon of subangular to tabular limestone gravels and cobbles at roughly 80 cmbs (see Table 1). This trench appears to have been affected by the construction of the bridge and associated activities. Stratigraphy in the remaining trenches (BHTs 05–06) were similar containing clay loams and clays with vertical cracks and slickensides overlying dense clay beginning around 90 cmbs (see Table 1). These deposits most closely resemble that described for the occasionally flooded Trinity clay (NRCS 2015). No cultural materials were observed in the excavations at Squirrel Creek.
- A pedestrian inspection was conducted across the upland component of the APE, which composes approximately 77.4 acres of the project area. Most of the existing ROW consists of a sloping embankment and bar ditch that align the entire roadway with evidence of extensive disturbance from roadway construction (e.g., berms and culverts), utilities (buried and overhead), fence lines, and roadway entrances (see Figures 3–7). Disturbances in the proposed new easement consist of extensive modification by heavy equipment and vegetation clearing (Figure 20). Nineteen shovel tests were excavated along the project corridor, including three in the existing State-owned ROW and 16 in the new proposed ROW associated with the planned S curves (see Figures 8a–8c). These shovel tests typically encountered a surface horizon of clay loams/clays overlying shallow degrading limestone bedrock (see Table 2). No cultural materials were observed within the shovel tests or the proposed APE. However, an historic-age artifact scatter was encountered adjacent to the project area in one area of proposed new ROW (Figure 21). The scatter was investigated through surface observation and two shovel test pits, determined to be an historic-age site, and designated trinomial 41GS246.

Table 2. Shovel Test Data

ST ID	Site	Depth (cmbs)	Munsell	Soil Color	Soil Texture	Inclusions	Comments/Reason For Termination
JU01		0–20	10YR3/2	very dark grayish brown	clay loam	30% gravels	No cultural material encountered. Termination due to disturbance.
JU02		0–30	10YR2/2	very dark brown	clay	none	No cultural material encountered. Termination due to compact soils.
JU03		0–30	10YR5/2	grayish brown	clay	20% gravels, degrading limestone	No cultural material encountered. Termination due to disturbance.
JU04		0–30	10YR5/2	grayish brown	clay	20% gravels, degrading limestone	No cultural material encountered. Termination due to disturbance.
JU05	FS01	0–30	10YR5/2	grayish brown	clay	20% gravels, degrading limestone	No cultural material encountered. Termination due to disturbance.
JU06	FS01	0–35	10YR3/2	very dark grayish brown	clay	none	No cultural material encountered. Termination due to compact soils.
JU07		0–30	10YR2/2	very dark brown	clay	none	No cultural material encountered. Termination due to compact soils.
JU08		0–30	10YR2/2	very dark brown	clay	30% gravels	No cultural material encountered. Termination due to compact soils.
JU09		0–30	10YR2/2	very dark brown	clay	25% degrading limestone	No cultural material encountered. Termination due to disturbance.
JU10		0–30	10YR2/2	very dark brown	clay	25% degrading limestone	No cultural material encountered. Termination due to disturbance.
JU11		0–10	10YR2/2	very dark brown	clay	none	No cultural material encountered. Termination due to water table.
JU12		0–10	10YR2/2	very dark brown	clay	none	No cultural material encountered. Termination due to water table.
JU13		0–20	10YR5/2	grayish brown	clay	15% imported gravels, 30% 10YR7/3 mottles	No cultural material encountered. Termination due to disturbance.
JU14		0–20	10YR5/2	grayish brown	clay	15% imported gravels, 30% 10YR7/3 mottles	No cultural material encountered. Termination due to disturbance.
KL01		0–22	10YR3/2	very dark grayish brown	clay loam	2% limestone pebbles	No cultural material encountered.
		22–29	10YR3/2–10YR3/3	very dark grayish brown to dark brown	clay loam to clay	none	Termination due to compact soils.
KL02		0–18	10YR3/2	very dark grayish brown	clay loam	2% limestone pebbles	No cultural material encountered.
		18–25	10YR3/2–10YR3/3	very dark grayish brown to dark brown	clay loam to clay	none	Termination due to compact soils.
KL03		0–26	10YR4/3–10YR5/3	brown	clay loam	tan mottling, limestone pebbles	No cultural material encountered.
		26–29	10YR5/3	brown	clay loam to clay	10% degrading limestone	Termination due to compact soils.
KL04		0–18	10YR4/3–10YR5/3	brown	clay loam	tan mottling, limestone pebbles	No cultural material encountered.
		18–31	10YR5/3	brown	clay loam to clay	10–15% degrading limestone pebbles	Termination due to compact soils.
KL05		0–5	10YR4/3–10YR5/3	brown	clay loam	30% limestone pebbles	No cultural material encountered. Termination due to compact soils.

- [redacted]. It consists of a surficial scatter of historic-age domestic debris and two features (F1 and F2). Due to extensive disturbance at the site, surface visibility was 90–100 percent. Two shovel tests (JU05 and JU06) were placed in the midst of the site to determine vertical extent of the cultural materials (see Table 2). Both of these excavations were negative and encountered degrading limestone bedrock and compact soils at 30 cmbs. The artifact assemblage (glass, metal, ceramic, and plastic) is severely disturbed and heavily fragmented with no artifacts greater than 3 inches (7 cm) in size observed. The glass artifacts (clear, blue, amethyst, and green colored) were exclusively from bottles, mostly beverage with two patent medicine containers (Figures 22 and 23). The metal fragments were all corroded and appeared to be a mix of machine parts and hinges. The ceramics were predominantly whiteware fragments with no makers' marks and one thick (0.5 inch [1.25 cm] thick) brown sherd with a dark brown glaze and coarse matrix. The plastic artifacts consist of clear beverage bottle detritus and assorted unidentifiable pieces. The temporally diagnostic artifacts for 41GS246 are limited to the glass category. Based upon manufacturing techniques, a portion of the glass assemblage (i.e., amethyst glass and several bottle finishes) date to the early twentieth century (IMACs 2001). The majority of the site assemblage appears to date to the middle to later twentieth century. Features identified at 41GS246 consist of a capped well or cistern (F1) and an area of ornamental flowers (F2), tentatively identified as irises (Figure 24).
- The well/cistern (F1) is roughly 3 feet (90 cm) in diameter, extends about 2 feet (60 cm) above the ground surface, has a red brick interior faced with concrete, and is capped by a 3-inch-thick (7-cm-thick) circular slab of concrete (Figure 25). The concrete lid had two holes bored through it, which may have functioned as intake and extraction points. If accurate, a cistern seems more likely as a pump would have been fit over the first of the holes for water extraction, while a feeder pipe would have deposited water into the chamber through the second. The concrete cap was too heavy to remove manually, so the internal architecture of the structure could not be verified. No inscription or other temporal informative elements were present on the feature, but it likely dates to the original early 20th-century construction period for the now absent structure.
- The second feature, F2, solely consists of small clusters of ornamental flowers, believed to be irises, scattered over a roughly 5 m diameter area (see Figure 24). Although considered, these were not interpreted as possible gravesite locations. First, there was no distinct mounding, depression, or soil discoloration around the cluster of plants. Conversely, there was a soil discoloration and presence of degraded limestone bedrock in the vicinity of the F2 well/cistern feature that suggested deep excavation into the substrate. Secondly, the area features a very shallow limestone substrate (generally encountered at a maximum of approx. 2 feet / 60 cm below the present ground surface), as was determined by the shovel tests (in the APE and on the site) and observed in a nearby ditch exposure. The shallow substrate would have been a deterrent to placing interments in this locality. Finally, the 1936 General Highway Map of Grayson County and 1962 Gunter USGS Topographic Quadrangle depict the Elliot Cemetery

approximately 3500 feet (≈1.1km) south southeast of the site. The close proximity of a community cemetery, combined with the shallow limestone bedrock underlying the site, would likely have made on-site internment impractical.

- No evidence of structural remains (e.g., foundation) or an associated refuse disposal area was observed on site. The entire area, including the surrounding Bois d'Arc and oak trees, has been extensively modified. Based on the artifact assemblage and features, 41GS246 is likely an historic farmstead dating to the early to late twentieth century. This site is in the same location as that of a structure illustrated on a 1936 general highway map for this location (Figure 26). At some point in the recent past, the structure was completely razed. Removal of debris disturbed surface and near-surface contexts in the immediate vicinity. As such, the present distribution of irises may not reflect their historic relationship to the site. Also, the well/cistern was likely avoided during demolition to avoid having to fill the cavity. At present, the site has no integrity aside from the cistern and can provide no new or beneficial information relevant to local or regional history. The archeological deposit lacks sufficient integrity of location and association, and does not merit a finding of significance (36 CFR 60.4). Regardless, no materials or features associated with site 41GS246 were identified within the area of new ROW. The site is entirely outside of the project's APE and will not be affected by the proposed work.
- **Archeological Materials Identified:** Site 41GS246, an historic (early to late twentieth century) farmstead located outside of the proposed APE.
- **APE Integrity:** The survey area within the new TxDOT easement (proposed new ROW) has variable integrity and appears to have been modified to a depth of generally 8 inches (20 cm) below surface. Disturbance at the surface is primarily attributed to agricultural practice and heavy equipment. The existing roadway, embankments, and bar ditch occupy the majority of the APE. Utilities located within the APE include a buried fiber optic line (south of FM 121), overhead utility poles, and road construction that have modified the deposits to roughly 8 to 16 inches (20–40 cm) below surface.

Recommendations

- **Archeological Site Evaluations:** No archaeological sites were documented within the APE. Site (41GS246) is adjacent to the APE, but has been severely disturbed by heavy equipment, lacks integrity, and can provide no new or beneficial information to local or regional history.
- **Comments on Evaluations:** None.
- **Further Work:** No further cultural resources investigations are recommended within the FM 121 project's APE, including both the existing ROW and the 19.6 acres of newly proposed ROW. Although existing utilities limited the amount of trenching that could be conducted in some areas, available exposures and trenches provided sufficient visibility to adequately assess the East Fork Trinity River and Squirrel Creek crossings.
- **Justification:** The upper 8 to 16 inches (20–40 cm) below surface of the APE has been disturbed and modified as a result of roadway and utilities construction. Below the zone of

disturbance, natural deposits were generally observed however, no cultural materials were identified. Based on the soil development characteristics and $CaCO_3$ prevalence, the deposits below roughly 5 feet (1.5 m) appear to have negligible potential for cultural materials.

- Review and consultation under Section 106 of the National Historic Preservation Act (36 CFR 800) and the Antiquities Code of Texas (Natural Resource Code, Title 9, Chapter 191) proceeded in accordance with the First Amended Programmatic Agreement among the Federal Highway Administration, the Texas Department of Transportation, the Texas State Historic Preservation Officer, and the Advisory Council on Historic Preservation Regarding the Implementation of Transportation Undertakings (PA-TU), as well as the Memorandum of Understanding (MOU) between the Texas Historical Commission and TxDOT (43 TAC 2.24).

- Pursuant to Stipulation VI of the PA-TU and 43 TAC 2.24(f)(C) of the MOU, TxDOT finds that the APE contains neither archeological historic properties nor State Antiquities Landmarks, and that the proposed undertaking would not affect such resources. Based on these findings, TxDOT proposes the following recommendations for the project:
  - no culturally significant resources will be affected through the proposed project as field investigations encountered no archeological materials or features, and an archival review did not identify archeological historic properties (36 CFR 800.16(l)) or State Antiquities Landmarks (13 TAC 26.8) within the APE that would be affected by this project;
  - no further archeological investigation is warranted at this time and the proposed project may proceed through development and construction; and
  - a 50-ft lateral buffer zone extending beyond the APE in which project impacts could extend without triggering additional investigations was considered within this resource assessment

- In the event that unanticipated archeological deposits are encountered during construction, work in the immediate area will cease and TxDOT archeological staff will be contacted to initiate post-review discovery procedures under the provisions of the PA-TU and MOU.

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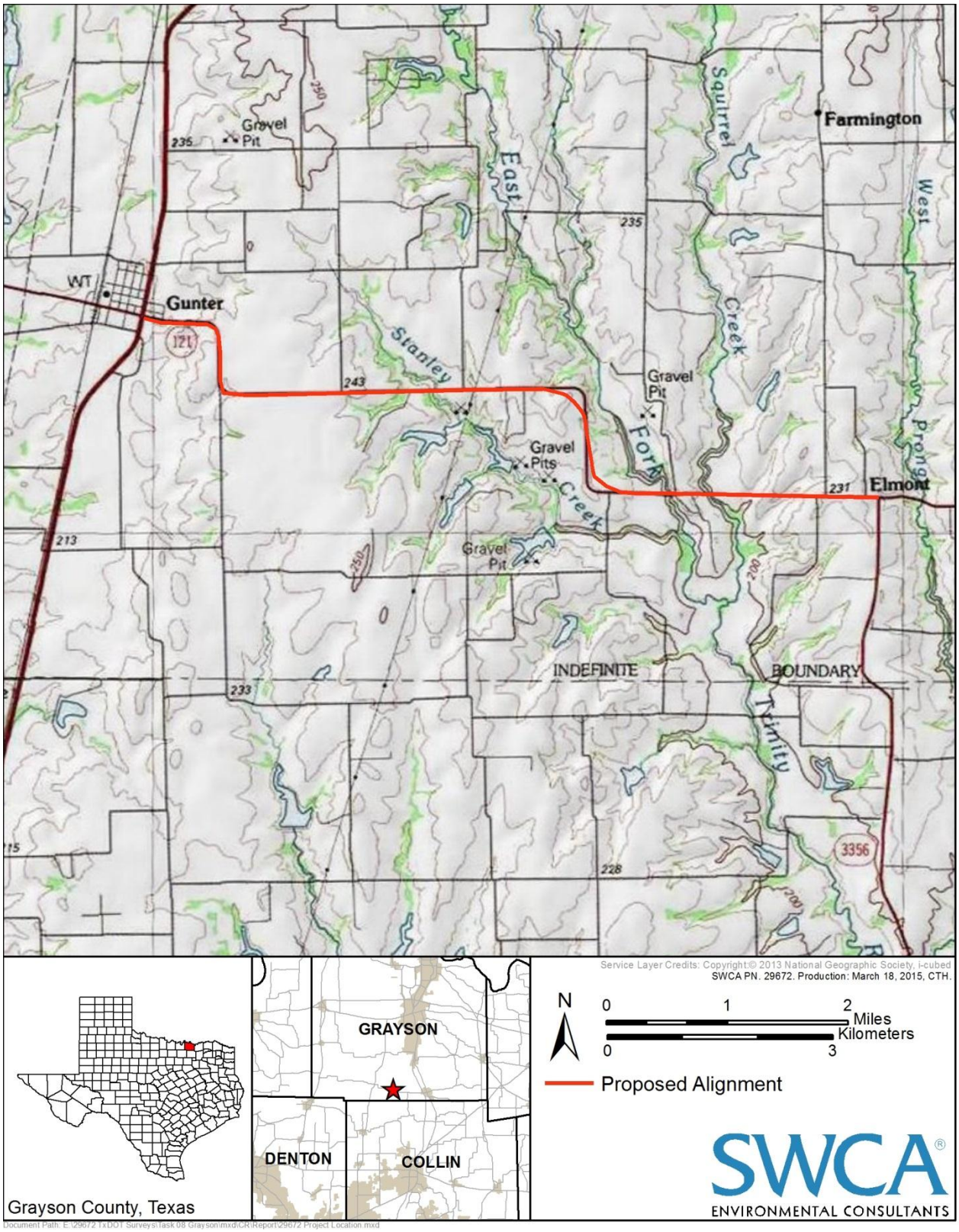

Figure 1. Project location map.

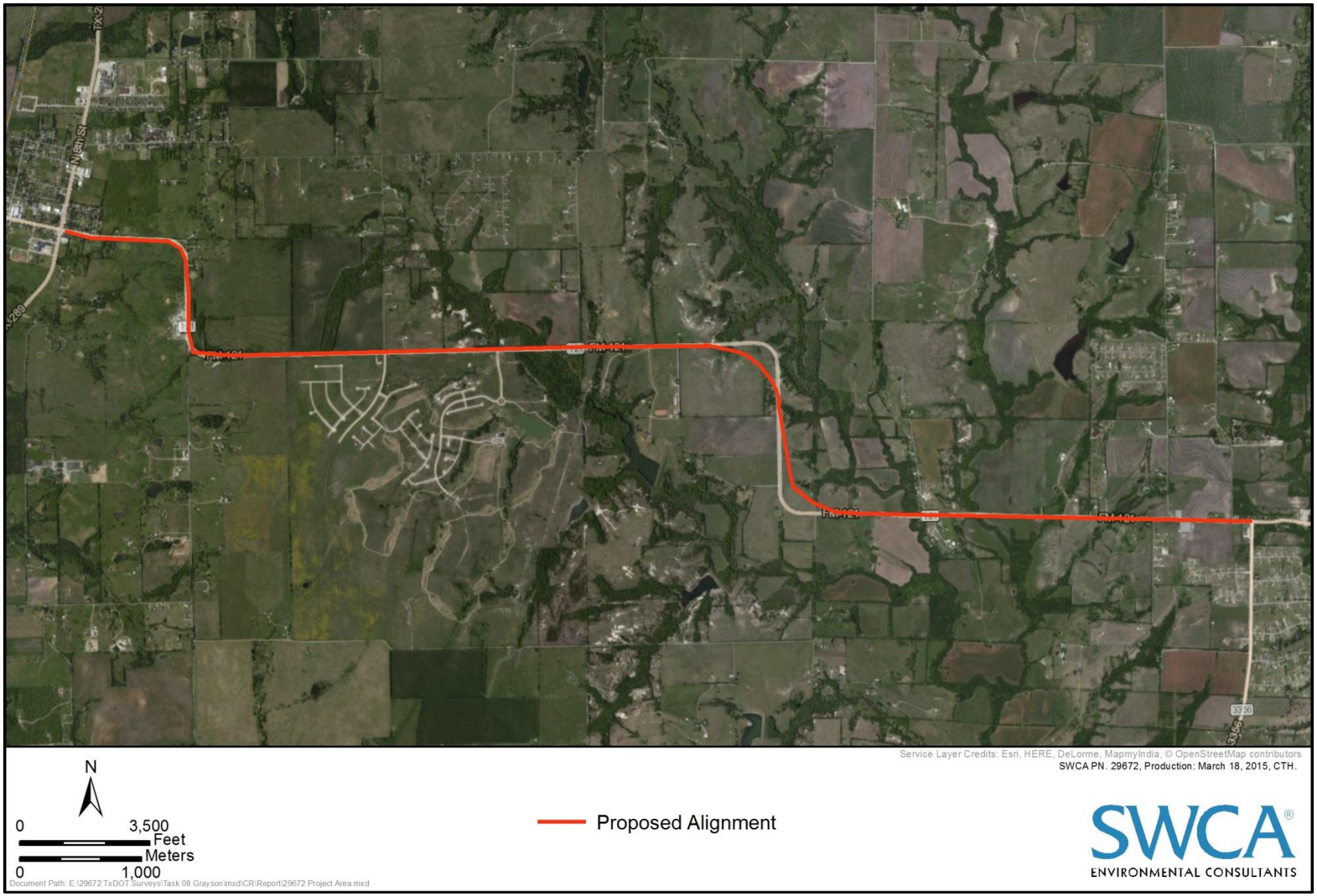

Figure 2. Project area.

Figure 3. Overview, facing west.

Figure 4. Typical right-of-way, facing east

Figure 5. Typical right-of-way, facing east.


Figure 6. Typical right-of-way, facing southeast.

Figure 7. Typical right-of-way, facing northwest.

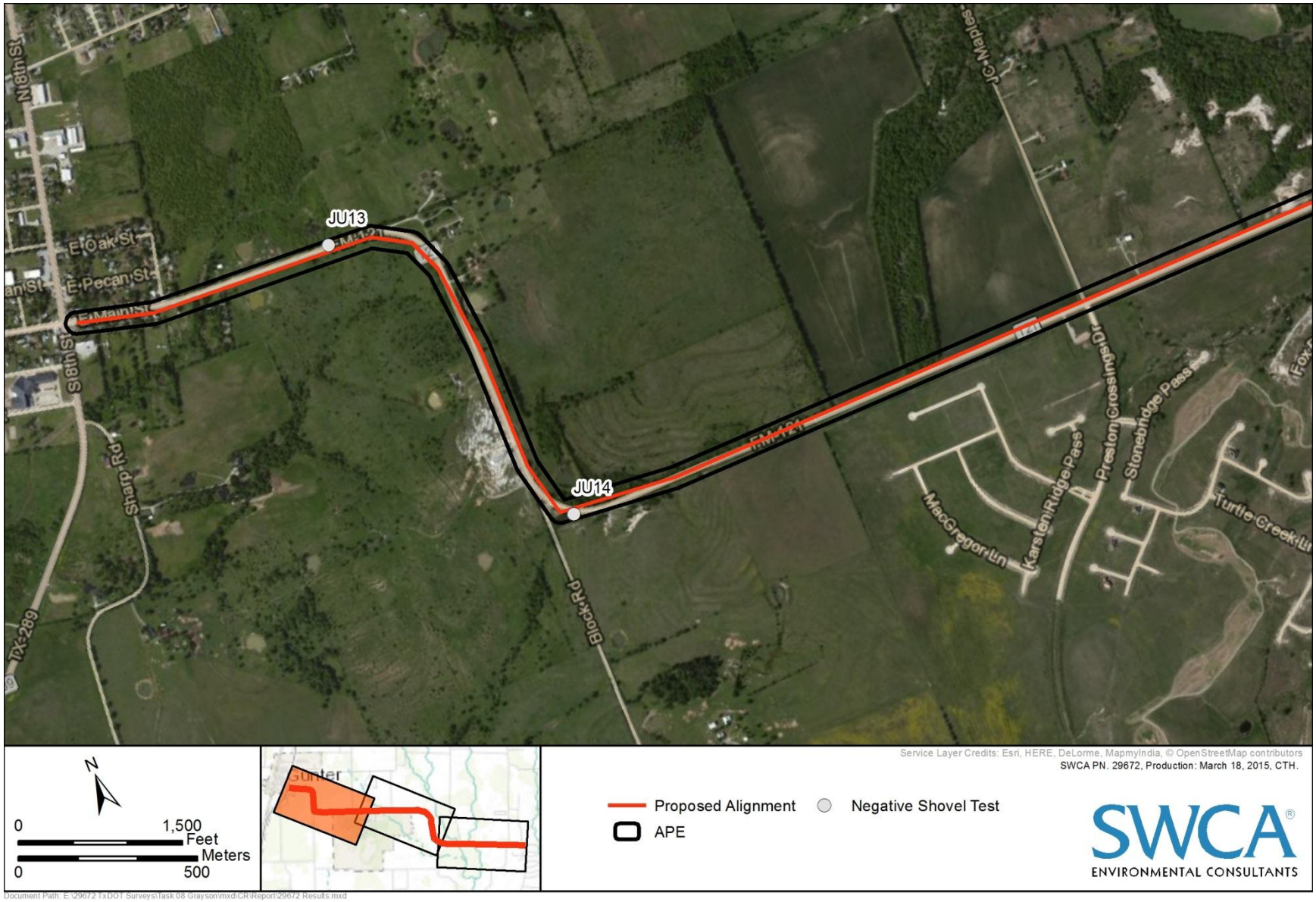

Figure 8a. Survey results, western segment.

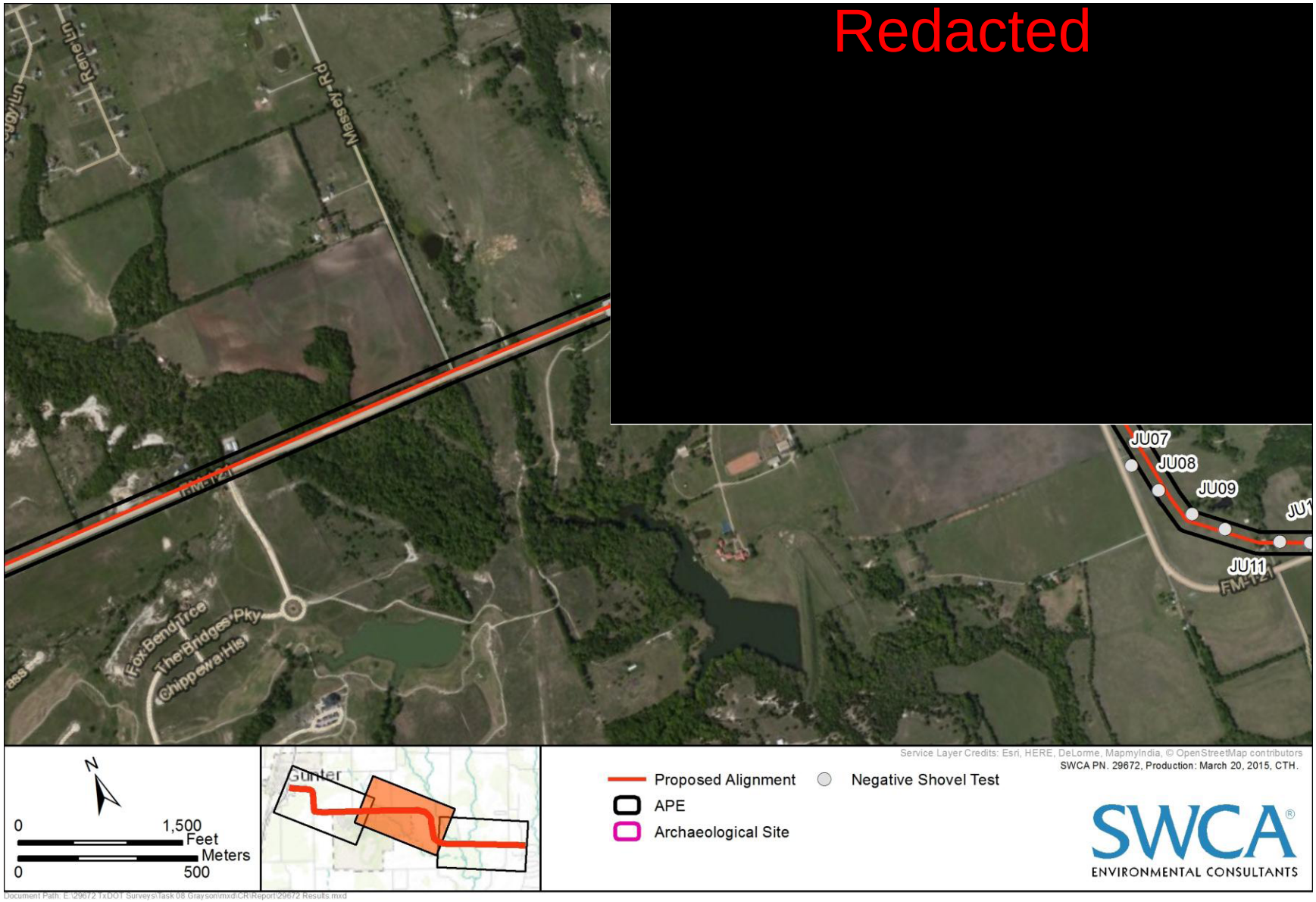

Figure 8b. Survey results, central segment.

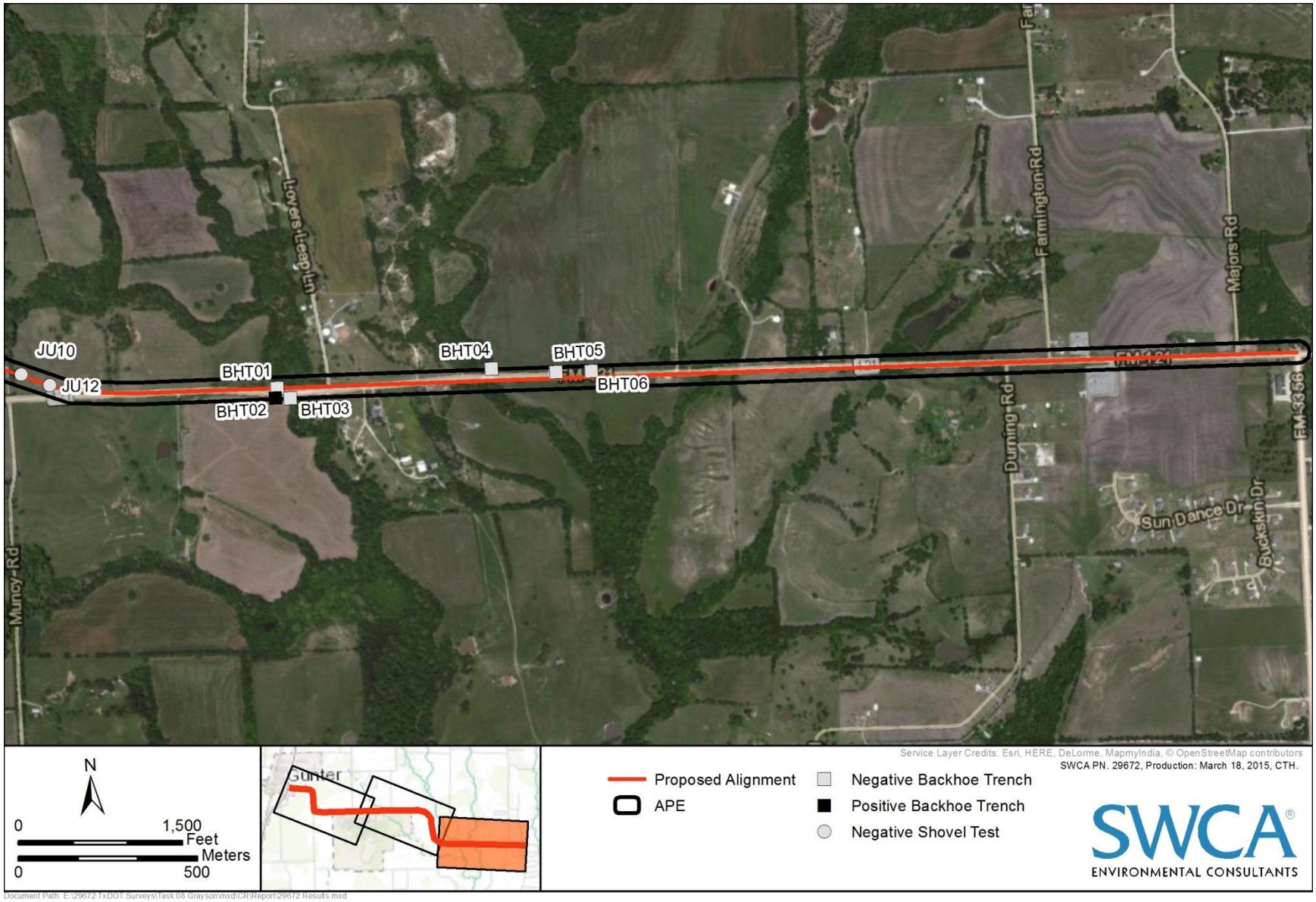

Figure 8c. Survey results, eastern segment.

Figure 9. East fork downstream, facing south.

Figure 10. BHT01 profile, facing north.

Figure 11. BHT02 column, facing south.

Figure 12. BHT03 profile, facing south.

Figure 13. Deer ulna at BHT02.


Figure 14. Squirrel Creek upstream, facing north.

Figure 15. Squirrel Creek BHT04, facing northeast.

Figure 16. Squirrel Creek south side right-of-way, facing east.

Figure 17. BHT04 profile, facing north.

Figure 18. BHT05 profile, facing north.

Figure 19. BHT06 profile, facing north.

Figure 20. Disturbed upland within area of potential effects, facing northwest.

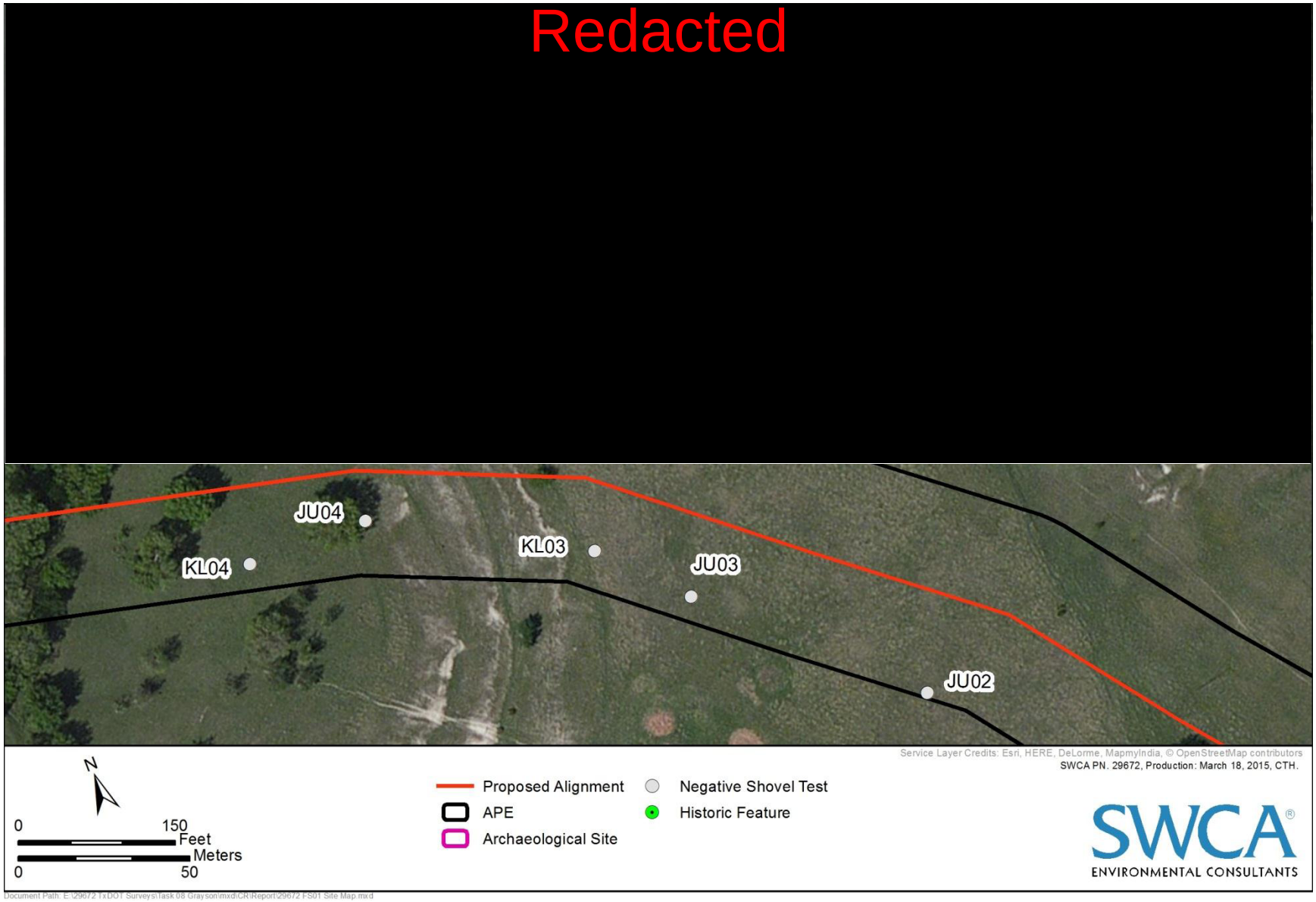

Figure 21. 41GS246 map.

Figure 22. Glass and finishes from FS01.

Figure 23. Bottle finish from FS01.

Figure 24. Photo of Feature F2 in foreground, identified as iris patches. Feature F1 is seen in the background (view southeast).

Figure 25. Photo of Feature F1 (view west). The structure represents either a well or cistern, and the concrete cover may have been a later addition.

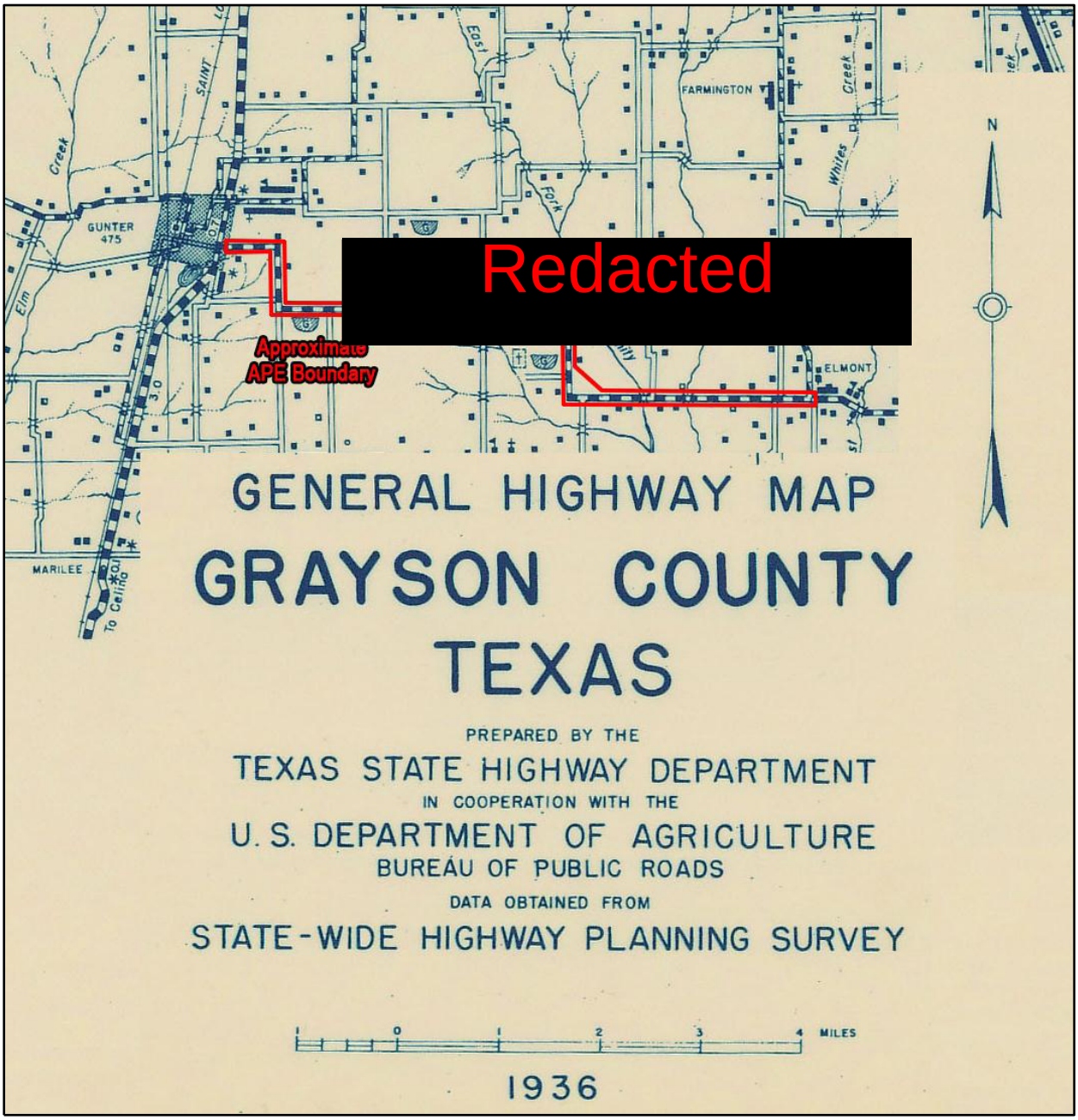

Figure 26. Grayson County General Highway Map.

This report was written on behalf of the Texas Department of Transportation by

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